

WHAT IS CLAIMED IS:

1. An iron sulfide with excellent durability having a mackinawite structure which contains  $\text{FeM}_x\text{N}_y\text{S}_z$  wherein M represents an alkaline earth metal, N represents an alkali metal, and x, y and z, indicating the molar proportions of the respective elements, represent numbers satisfying  $0.01 < x \leq 0.5$ ,  $y \leq 0.2$  and  $0.7 \leq z \leq 1.4$ , as an essential component;

2. An iron sulfide with excellent durability having a mackinawite structure which contains  $\text{FeM}'_x\text{N}_y\text{S}_z$  wherein M represents Ca, Mg or combination thereof, N represents an alkali metal, and x, y and z, indicating the molar proportions of the respective elements, represent numbers satisfying  $0.01 < x \leq 0.5$ ,  $y \leq 0.2$  and  $0.7 \leq z \leq 1.4$ , as an essential component.

3. The iron sulfide as claimed in claims 1 or 2, wherein the mackinawite structure is a denatured mackinawite structure which gives an XRD pattern wherein spacing between 001 planes has increased in c axis direction to a value of from 5.03 Å to 5.53 Å and the ratio of the intensity for the diffraction peak attributable to any other hkl planes to that for the diffraction peak attributable to the 001 planes is 20/100 or lower.

4. A process for producing the iron sulfide of claim 1 or 2, which comprises mixing an aqueous solution of a salt of bivalent iron, an aqueous solution containing sulfur ions and an alkaline earth metal ingredient and

adjusting the pH of the resulting slurry to 7.0 or higher.

5. The process as claimed in claim 4, wherein the alkaline earth metal is calcium and/or magnesium.

6. A process for producing the iron sulfide of claim 3, which comprises mixing an aqueous solution of a salt of bivalent iron with an aqueous solution containing sulfur ions in the presence of an alkaline earth metal ingredient to prepare a slurry and adjusting pH of the slurry to 7.0 or higher.

7. The process as claimed in claim 5, wherein the alkaline earth metal is calcium and/or magnesium.

8. An iron sulfide mixture comprising the iron sulfide of claim 1, 2 or 3 and at least one alkaline earth metal compound.

9. The iron sulfide mixture as claimed in claim 8, wherein the alkaline earth metal compound is at least one compound selected from the group consisting of hydroxides, carboxylates, phosphates and sulfites of alkaline earth metals.

10. A heavy metal treating agent comprising the iron sulfide of claim 1, 2 or 3 as an effective component.

11. A heavy metal treating agent comprising the mixture of claim 8 or 9.

12. A method for treating heavy metals which comprises adding the heavy metal treating agent of claim 10 or 11 to a refuse incineration ash, fly ash or fused fly ash each containing at least one heavy metal, and kneading

the resulting mixture.

13. The method as claimed in claim 12, wherein after adding the heavy metal treating agent, water is added to the mixture.

14. A method for treating heavy metals which comprises adding the heavy metal treating agent of claim 10 or 11 to a soil containing at least one heavy metal, and kneading the resulting mixture.

15. The method as claimed in claim 14, wherein after adding the heavy metal treating agent, water is added to the mixture.

16. A method for treating heavy metals which comprises adding the heavy metal treating agent of claim 10 or 11 to a waste water containing at least one heavy metal, and stirring the resulting mixture.

17. The method as claimed in claim 12, 13, 14, 15 or 16, wherein the heavy metal is at least one element selected from the group consisting of Pb, Cd, Hg, Zn, Cu, Ni, Cr, As, Se, Sb and Mo.